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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,571	06/23/2003	Masao Hori	HARA-072-046	9645

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KUBOVCIK & KUBOVCIK
SUITE 710
900 17TH STREET NW
WASHINGTON, DC 20006

EXAMINER	
NGUYEN, TU MINH	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/600,571	HORI ET AL.	
	Examiner	Art Unit	
	Tu M. Nguyen	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 08/875,577.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *121603*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. An Applicant's Preliminary Amendment filed on September 24, 2003 has been entered. Overall, claims 1-7 are pending in this application.

This pending application is a continuation of 08/875,577 filed on July 24, 1997 and has a foreign priority application filed on December 6, 1995.

Specification

2. The abstract of the disclosure is objected to because the abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. Correction is required. See MPEP § 608.01(b).

Claim Objections

3. Claims 3 and 6 are objected to because of the following informalities:

- Claim 3, line 5 of the claim, "ration" should read --ratio--.

- Claim 6, line 3 of the claim, --at least one of-- should be inserted preceding "platinum". Also on the same line, "and/or" should read --and--.

Appropriate correction is required.

Claim Rejections – Decision by the Board of Patent Appeals and Interferences

4. Claims 1-7 are rejected under the doctrine of *res judicata* since the patentability of these claims has already been adjudicated by the Board of Patent Appeals and Interferences in the decision mailed on April 23, 2003. See *In re Freeman*, 30 F.3d 1459, 31 USPQ 2d 1444 (Fed. Cir. 1994). *Edgerton v. Kingland* , 168 F. 2d 121, 75 USPQ 307 (D.C. Cir. 1947). *In re Szwarc* , 319 F.2d 277, 138 USPQ 208 (CCPA 1963). *In re Katz* , 467 F.2d 939, 167 USPQ 487 (CCPA 1970) (prior decision by District Court).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 2, 5, and 7 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hirota (U.S. Patent 5,211,010)..

Re claim 1, as illustrated in Figures 1 and 3, Hirota discloses a process for purifying exhaust gas from gasoline engines comprising a step of purifying exhaust gas from a gasoline engine (2) of a fuel-direct-injection type by contacting said exhaust gas with an exhaust-gas purifying-use catalyst (4) that contains a noble metal (lines 54-62 of column 1) and is maintained between a predetermine range of temperature for optimum NOx purification (lines 23-36 of column 2),

wherein the gasoline engine (2) of a fuel-direct-injection type is one which allows fuel to be directly injected inside a cylinder of the engine, and

wherein the exhaust gas varies between a first exhaust gas state (small excess air ratio) (step 204 with YES answer; line 63 of column 5 to line 3 of column 6) having an exhaust-gas temperature in a range of 350°C to 800°C at an inlet of the catalyst and a second exhaust state (large excess air ratio) (step 208 with YES answer; lines 19-33 of column 6) that forms a more oxidizing, low-temperature atmosphere as compared with the first exhaust gas state, depending on changes in air-fuel ratio, the second exhaust gas state having an exhaust-gas temperature in a range of 200 to 500°C at the inlet of the catalyst.

Hirota, however, fails to specifically disclose that a temperature sensor is placed at an inlet position of the catalyst to detect a temperature which corresponds to a catalyst temperature.

As indicated on lines 40-48 of column 3, Hirota briefly discloses various means to determine a temperature that corresponds to a catalyst temperature. Those with ordinary skill in

the art would immediately recognize that a temperature sensor placed at the inlet of the catalyst (4) can also be used to accurately estimate a catalyst temperature.

Re claim 2, in the process of Hirota, the exhaust gas is purified by removing hydrocarbon, carbon monoxide, and nitrogen oxides from the exhaust gas by the use of the catalyst (4).

Re claim 5, in the process of Hirota, the catalyst (4) includes at least one kind of noble metals, selected from the group consisting of platinum, palladium, rhodium, and iridium.

Re claim 7, in the process of Hirota, the catalyst (4) further comprises a transition metal (lines 56-59 of column 1).

8. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirota as applied to claim 1 above, in view of legal precedent.

Re claim 3, in the process of Hirota, the first exhaust gas state appears when the air-fuel ratio is such that a small excess air ratio exists in the exhaust gas, and the second exhaust gas state appears when the air-fuel ratio exceeds the above-mentioned air-fuel ratio. Hirota, however, fails to disclose that the air-fuel ratio for the first state is in the range of 13 to 15.

Hirota discloses the claimed invention except for specifying an optimum range of engine air-fuel ratio for the first exhaust gas state (small excess air ratio). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a specific optimum range of engine air-fuel ratio for the first exhaust gas state, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Re claim 4, in the process of Hirota, the second exhaust gas state (large excess air ratio or lean) appears when the air-fuel ratio ranges from more than 15 up to 50.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirota as applied to claim 1 above, in view of official notice.

The process of Hirota discloses the invention as cited above, however, fails to disclose that the catalyst includes at least one of platinum and iridium.

It is well known to those with ordinary skill in the art that platinum is a typical noble metal utilized in the catalyst (4) of Hirota. Therefore, such disclosure by Hirota is notoriously well known in the art so as to be proper for official notice.

Prior Art

10. The IDS (PTO-1449) filed on December 16, 2003 has been considered. An initialized copy is attached hereto.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of three patents: Nomura et al. (U.S. Patent 5,174,111), Sasaki et al. (U.S. Patent 5,207,058), and Tashiro (Japan Publication 06-074023) further disclose a state of the art.

Communication

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623. The fax phone number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.

Tu M. Nguyen

TMN

April 18, 2004

Tu M. Nguyen

Patent Examiner

Art Unit 3748